

**What Is Claimed:**

1           1. A method of preventing interference in a communication  
2 system comprising the steps of:  
3           generating a fixed reuse pattern in a service area from a high altitude  
4 communications device, said pattern having at least a first resource cell and a  
5 second resource cell;  
6           selectively suppressing a side lobe of a beam having a first resource  
7 so a non-side lobe suppressed portion aligns with a cell having said second  
8 resource.

1           2. A method as recited in claim 1 wherein the step of  
2 selectively suppressing comprises the step of reshaping the antenna to suppress side  
3 lobe interference at the interference locations.

1           3. A method as recited in claim 2 further comprising the step of  
2 maintaining the shape of the antenna in non-interference locations.

1           4. A method as recited in claim 1 wherein said first resource  
2 and said second resource comprise a frequency.

1           5. A method as recited in claim 1 wherein said first resource  
2 and said second resource comprise polarization.

1           6. A method as recited in claim 1 wherein said first resource  
2 and said second resource comprise an orthogonal code.

1           7. A method as recited in claim 1 wherein said high altitude  
2 communication device comprises a satellite.

1                   8. } A communication system as recited in claim 1 wherein said  
2   high altitude communication device comprises a stratospheric platform.

1                   9. } A communication system comprising:  
2                    a high altitude communication device having an antenna for  
3                   generating a first plurality of beams, each of said plurality of beams having a first  
4                   frequency resource, a plurality of main lobes directed to one of a first plurality of  
5                   cells, and a plurality of side lobes and a second plurality of beams having a second  
6                   resource directed to one of a second plurality of cells,  
7                    said antenna formed so that said side lobes of said first plurality  
8                   beams are selectively suppressed in said first plurality of cells having said first  
9                   resource.

1                   10. A communication system as recited in claim 9 wherein said  
2   high altitude communication device comprises a satellite.

1                   11. A communication system as recited in claim 9 wherein said  
2   high altitude communication device comprises a stratospheric platform.

1                   12. A method as recited in claim 9 wherein said first resource  
2   and said second resource comprise a frequency.

1                   13. A method as recited in claim 9 wherein said first resource  
2   and said second resource comprise polarization.

1                   14. A method as recited in claim 9 wherein said first resource  
2   and said second resource comprise a code.

1               15. A method of forming a communication system comprising  
2 the steps of:  
3               generating a fixed reuse pattern having a maximum capacity having  
4 a first beam and a plurality of second beams;  
5               identifying interference locations of said first beam relative to said  
6 second plurality of beams; and,  
7               reshaping the antenna to suppress interference at the interference  
8 locations.

1               16. A method as recited in claim 15 further comprising the step  
2 of maintaining the shape of the antenna in non-interference locations.

1               17. A method as recited in claim 15 wherein said first beam has  
2 a first resource and said second beam has said first resource, wherein said  
3 interference locations correspond to a side lobe of said first beam corresponding to  
4 said second beam.

1               18. A method as recited in claim 17 wherein said first resource  
2 and said second resource comprise a frequency.

1               19. A method as recited in claim 17 wherein said first resource  
2 and said second resource comprise polarization.

1               20. A method as recited in claim 17 wherein said first resource  
2 and said second resource comprise an orthogonal code.

SCB  
A2

ADD  
A2